EFFECTIVENESS OF GARLIC INTAKE ON BLOOD PRESSURE AMONG PATIENTS WITH HYPERTENSION

A DISSERTATION SUBMITTED TO THE TAMILNADU DR. M.G.R MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING.

APRIL 2011

CERTIFICATE

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"Thanks be to God for his Indescribable gift"

\- ***II Chore. 9.75***

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ABSTRACT

"An experimental study to assess the effectiveness of Garlic intake on blood pressure among patients with hypertension attending out patient unit in selected hospital at Madurai". The experimental approach was used for this study. The design adopted for the study was quasi experimental pre test post test control group design. The purposive sampling technique was used to select the subjects with hypertension. The samples consisted of 60 patients, in that 30 were in experimental group and 30 were in control group. The experimental group was treated only with garlic per day for continuous 15 days and the control group was treated with anti hypertensive drugs. The tool used was Bio-physiological measurement (sphygmomanometer). The descriptive and inferential statistics were used to analyze the data. The major study findings were the mean blood pressure level after administration of Garlic intake among the patient with hypertension was less than mean blood pressure level before administration of Garlic therapy. ('t' 15.2 and 7.6 df = 29). The mean blood pressure level after administration of Garlic intake ('t' 9.64 $p > 0.05$) among the patient with hypertension was lesser than the mean blood pressure level of the control group ('t' 3.27 $p > 0.05$). There was no association between post test blood pressure levels with selected demographic variables such as age, sex, occupation, education, duration of illness, dietary pattern except BMI. Based on the findings of the study, a longitudinal study to assess the effectiveness of garlic intake in maintaining blood pressure level and also to assess the effectiveness of garlic intake can be tested for other disease conditions like hyperlipidemia and other cardiac diseases was recommended for the future study.

CHAPTER – I

INTRODUCTION

BACKGROUND OF THE STUDY

"It is easy to get a thousand prescriptions but hard to get one single remedy"

(Chinese proverb)

Cardio vascular disease is the leading cause of death and disability in the United States and other industrialized nations, as well as in the growing number of developing countries. (AM. Board J-2005)

Hypertension is defined as a systolic blood pressure greater than 140 mm of Hg and a diastolic blood pressure greater than 90mm/Hg based on the average of two or more correct blood pressure measurements taken during two or more contacts with a health care provider. (Seltzers & Bare, 2004).

According to the seventh report of the joint national committee recommendation as sited in, on prevention, detection, valuation and treatment of blood pressure for adults aging from 18 to older age. They also classified blood pressure according to the level.

B.P Classification	**Systolic BP (mm of Hg)**	**Diastolic B.P (mm of Hg)**
Normal	< 120	< 80
Pre hypertension	121 – 139	81 – 89
Stage I – HT	140 – 159	90-99
Stage II – HT	≥ 160	≥ 100

Davidson (2006) stated that in more than 95% of cases, a specific underlying cause of hypertension cannot be found. Such patients are said to have essential

hypertension. Hypertension is more common in some ethinic groups, particularly in black Americans and in Japanese. Approximately 40-60% are explained by genetic factors.

Hypertensive patients are at risk of heart attack, heart failure, stroke, accelerated coronary artery disease, aortic aneurysm, kidney failure and retinopathy. (Kodwal GV, 2006)

Anti hypertensive medications can be classified into the following categories. Diuretics, alpha and beta adrenergic antagonists, vasodilators, calcium antagonists, angiotensin converting enzyme inhibitors and angiotensin receptor blockers. If therapy is chosen carefully, more than half of mild hypertension cases can be controlled with one or two drugs. (Joyce & Black, 2005).

Correct choice of treatment regimen for hypertensive client is lifestyle modification, weight reduction, sodium restriction, modifying dietary pattern, exercise, alcohol restriction, caffeine restriction, smoking cessation and pharmacologic intervention. (James Etta, 2004).

The risk of high blood pressure increases with age and like it or not, gets moving. Regular exercise can help to prevent blood pressure which reduces the risk of cardio vascular disease and stroke. (Mayo clink Staff, 2006)

Treatment of High Blood Pressure includes change of outlook life style, exercise, yoga, hydrotherapy, mud therapy, colour therapy & dietary modification. (Shukla. R.C, 2007).

Patients with pre hypertension are at risk of developing persistent hypertensive disorders. It is the right time to modify lifestyle and eating habits to avoid entering the disease phase.

Garlic is one of the best alternative treatments to avoid treating patient with pharmacological side effects. Garlic has a property of reduction of B.P. In this study I would like to study its effectiveness.

Garlic (Allium Sativam) has played an important dietary as well as medicinal role in human history. Blood pressure reducing properties of garlic have been linked to its hydrogen sulfide production and allicin content liberated from allicin and the enzyme allinase which has angiotensin II inhibiting and vasodialating effects, as shown in animal and human cell studies. (Adu be Acrobat Reader)

Garlic is extremely effective in lowering high blood pressure and recent studies have confirmed that Garlic contains certain chemical substances called hydrogen sulfide which interacts with human blood corpuscles.

Researchers observed that this particular interaction resulted in the garlic compounds getting metabolized to water which helps to relax the blood capillaries or vessels. The hydrogen sulfide produced in the vascular system acts on the cell membranes and makes the smooth muscles relax, thereby working towards controlling high blood pressure. In the German journal Planta Medica, it was reported that garlic has a small peptide which inhibits the production of a certain blood pressure raising hormone.

What is great about garlic is that, unlike chemical drug medications, garlic is not only able to lower high blood pressure. In other words it is more of a blood pressure regulator and balancer and restoring it to healthy levels. (Ried, 2009).

SIGNIFICANCE AND NEED FOR THE STUDY

"Hypertension is a silent killer disease of today"

(K.K. Agarwal)

High blood pressure describes the high force of blood against the artery walls. It means that the heart is working much harder than heart of a normal healthy human. Hypertension is a dangerous condition that does not have a cure, but it can be kept in check by taking medication regularly and by eating healthy meals. (Centre for Disease control & American Heart Association, 2004)

Raw Garlic and garlic supplements have been shown to be useful for lowering high blood pressure level. Garlic has a small peptide which inhibits the production of a certain blood pressure raising hormone. (Health action 2009, German Journal Planta Medica).

National Heart Lung and Blood institute (NHLB1) (2003) survey shows world wide prevalence of high Blood pressure is as high as one billion, and approximately 7 million death per year may be attributable to hypertension. The World Health Organization report shows that sub optimal Blood pressure (greater 115mm Hg Systolic blood pressure) is responsible for 60% of cardio vascular diseases and 50% ischemic heart disease with little variation by sex.

It is estimated that roughly 25 to 30% of the population in urban areas and to 10 to 12% in rural areas in India suffer from High Blood pressure. It usually has other complications such as renal failure, arthrosclerosis which leads to heart attack and death.

In India, the prevalence of blocked arteries of heart is roughly two to four times higher than with other population groups, world wide, and this is just not confirmed to an

Indian in India, but also to Indians in western countries. Therefore it is not wrong to say that there is virtually an epidemic of heart and blood vessel diseases in this country and one really need to take measures to prevent the spread of this epidemic. One of the simplest ways of keeping away from these problems is to keep the blood pressure in control. (Kadival KV, 2006)

High blood pressure is the leading risk factor for mortality around the world. Hypertension among adults increased by 60% from 1995-2005.(AHA, 2007).

Factors leading to hypertensions are, age, alcohol, cigarette smoking, Diabetes mellitus, elevated serum lipids, excess dietary sodium, gender family history, obesity, ethnicity, sedentary lifestyle, socio economic status and stress. (Lewis 2007).

To reduce the Hypertension there are some clinical guidelines for hypertension. That is Life style modifications, weight reduction, dietary pattern, eating plenty of fruits & vegetables, garlic, increasing fiber intake, drinking lot of water, dietary sodium restriction, avoidance of tobacco use and stress management. (Lewis 2007).

Garlic is a nature's best known herb. Its medicinal value has been understood for at least 2000 years. Garlic contains hundreds of minerals and nutrients. It is a member of lily family one of the closest relatives being the onion. (Satya Bhama & SR. Malhotra, 2009.

Several clinical studies support the use of garlic to prevent cardiovascular diseases. Aged Garlic is rich in surfer compounds that are absorbent and have beneficial effects on heart disease & health. Garlic could potentially disrupt anti-coagulant. So it is best to be avoided before surgery. Garlic will reduce atherosclerotic buildup (plaque)

within arterial system, prevent blood clots from forming, reducing the possibility of heart attacks.

Study conducted in clinical research centre in New Orleans, examined the link between garlic and blood pressure. The study investigated the use of a popular garlic preparation on persons suffering from severe Hypertension. This study also concluded that garlic lowers blood pressure, with no significant side effects being reported.

More recently, in mid 2008, a team at Adelaide University in south Australia in a bid to draw a connection between garlic and Blood pressure; looked at and reviewed 11 previous studies. In those studies, the patients took various garlic supplements daily for 3 to 4 months. And the analysis showed that garlic caused significant decreases in levels of blood pressure. The results gotten by the garlic supplements were even as good as those achieved by drugs such as 'beta blockers'.

According to the study, the amount of allicin in the supplements given was only about the amount found in a small clove of Garlic. They found that garlic intake reduced systolic blood pressure (SBP) by 4.6 mm of Hg more than placebo and Diastolic blood pressure is reduced by 7.3mm of Hg more than placebo. (Adelaide University in South Australia, 2009).

The nurse's role in hypertension care all over the world is first and foremost to educate give advice and measure the blood pressure. The education deals with modifying dietary pattern and physical activity, weight, stress, smoking and alcohol intake although the research does agree about the benefits of non pharmacological treatment. The nurse is more successful in interaction with the patient and can spend more time with him/her

and educating dietary pattern with follow-up visits .The nurse's task is as a coordinator and an interpreter. (Johnson 2010).

Supplementary treatments have been researched extensively in recent year's lifestyle modification, also termed as 'non-pharmacologic therapy'. Current research illustrates that garlic reduces atherosclerosis there by reducing the blood pressure. (Stein, 2008).

Even though the patients know that they are hypertensive, most of the patients are unaware of complementary and alternative therapies to reduce the Blood pressure. Not many studies have been made to reveal what patients know about complementary or alternative therapies. The investigator believes that the alternative therapy helps to reduce blood pressure level .In turn this will help the health personnel to educate the public and bring awareness among the people and to modify their dietary pattern and life style to prevent hypertension in pre hypertensive state. Hence this study was undertaken.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of Garlic intake on blood pressure among patient with hypertension attending out patient unit in selected hospital, Madurai.

OBJECTIVES

1. To find out the pre-test and post-test levels of blood pressure among the experimental group of patients with hypertension who had the intake of garlic.
2. To find out the pre-test and post-test levels of blood pressure among control group of patients with hypertension.
3. To evaluate the effectiveness of garlic among the patients with hypertension.

4. To find out the association between the post-test levels of Blood pressure among patients with hypertension and demographic variables (age, sex, education, diet, disease condition) in experimental group.

HYPOTHESES

All hypotheses will be tested at 0.05 level of significance.

H1: The mean post-test blood pressure level of experimental group will be significantly lower than the mean pre test blood pressure level among patients with hypertension who received garlic intake.

H2: The mean post test blood pressure level of experimental group will be significantly lower than the mean post test pressure level among patients with hypertension in control group.

H3: There will be a significant association between mean post test blood pressure level and selected demographic variables such as age, sex, occupation, education and duration of illness, treatment, clinical symptom helped in diagnosis, dietary pattern and BMI.

OPERATIONAL DEFINITIONS

***Effect*:**

It means that in a way which produces the intended results (or) a successful result. In this study, it refers to the outcome of garlic intake in reducing the level of blood pressure among the patients with hypertension and it was measured by biophysiological measure. (Sphygmomanometer)

Reduction of 8.4mm of Hg in systolic blood pressure and 7.3 mm of Hg in diastolic blood pressure shows the effectiveness of garlic intake.

Normal Blood Pressure: 120/80 mm of Hg

Garlic intake:

Garlic (Allium sativum) is nature's best known herb. It contains hundreds of minerals and nutrients. It is a member of lily family, one of the closest relatives being the onion. It denotes that Garlic is a powerful agent for reduction of blood pressure. In this study, the patients with hypertension were given 4 large cloves of garlic a day (24gm), which was boiled in water and given in morning at 7am for continuous 15 days for the purpose of reduction in blood pressure.

Blood pressure level:

The pressure exerted on the walls of the artery by the blood as it flows through them. It can be measured in millimeter of mercury by using a 'sphygmomanometer'.

The normal blood pressure-120/80 mmHg

Hypertension:

It is an abnormal high blood pressures that involving systolic and diastolic blood pressure. In this study, it refers to the patients diagnosed to have hypertension by the physician from selected hospital during the data collection period.

ASSUMPTIONS

1. Nursing intervention based on the needs of clients will enhance their interest to practice.
2. Garlic intake has no adverse effect on client with hypertension.
3. Clients with Hypertension would not have difficulty in taking garlic in their residence
4. It is assumed that the subjects would willingly participate in this study.

DELIMITATIONS

1. Subjects with Hypertension on oral anti hypertensive agents who are attending out-patient department in selected Hospital at Madurai during the data collection period.
2. Garlic therapy was practiced by the subjects for 30 minutes for 15 days.
3. The data collection period is limited to 6 weeks.

PROJECTED OUTCOMES

The study will be useful for the nurses to enlighten their knowledge regarding garlic intake on reducing blood pressure. By that it helps in reducing the blood pressure among patient with hypertension.

CONCEPTUAL FRAMEWORK

The study was based upon J. W. Kenny's open system model. All living systems are open in that there is a continual exchange of matter, energy and information. Open systems have varying degrees of interaction with the environment from which the system receives input and gives back output in the form of matter. Energy and information. For survival all system must receive varying types and amount of matter, energy and information.

The main concepts of the system model are Input, Throughput, Output and Feedback.

INPUT:

In this open system theory, Input refers to the matter, energy and information that enter in to the system through its boundary. In this study it refers to garlic intake for experimental group and routine treatment for control group.

THROUGHPUT:

In this open system theory, Throughput refers to processing where the system transforms the matter, energy and information. In this study it refers that hydrogen sulfide interacts with human red blood cells and gets metabolized with water there by relaxing the blood capillaries and no interaction between hydrogen sulfide with red blood cells in control group.

OUTPUT:

In this open system theory, Output refers to the matter, energy and information that are processed. After processing the input, the system returns output (matter, energy and information) to environmental in altered state. In this study it refers to samples in experimental group(garlic intake) had reduction in blood pressure level and no reduction in blood pressure level in control group (routine treatment).

FEEDBACK:

In the open system theory, Feedback refers to environmental response to the system's output used by the system adjustment. In this study it refers to changes in the blood pressure of the samples and if there is no changes in the blood pressure among the subjects then reassessment to be done from the assessment.

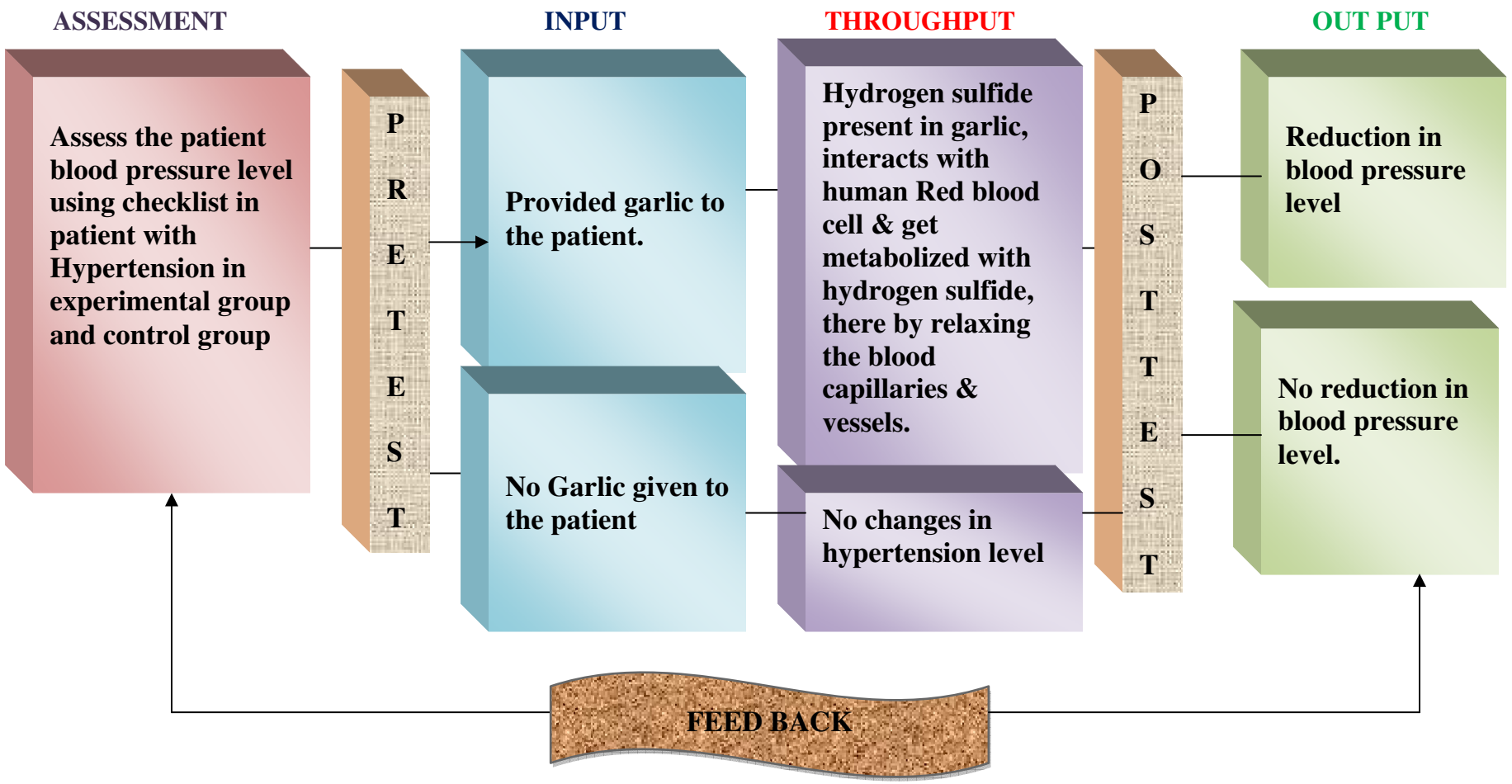

Figure 1: CONCEPTUAL FRAME WORK BASED ON J.W. Kenny's Open System Mode

CHAPTER – II

REVIEW OF LITERATURE

Researcher almost never conducts a study in an intellectual vacuum. Their studies are undertaken within the content of an existing base of knowledge. Researcher generally, undertake a literature review of familiarize them about the topic under study (Polit & Hunger, 2007).

The review of literature was done from published articles, textbook, report and Medline search. Literature review is organized and presented under the following headings;

1. Studies and literature related to hypertension.
2. Studies and literature related to the effect of garlic therapy on hypertension.
3. Studies and literature related to the nurse's role in educating the patients regarding maintenance of normal blood pressure.

1. Studies and Literature related to Hypertension

Halimi etal (2002), conducted a study on "the risk of hypertension in men direct and indirect effects of chronic smoking". A population based cross sectional study in 12,417 men screened for a routine medical and biological checkup provided by their medical insurance. The authors reported that, overall, the prevalence of hypertension was higher informer smokers than in non smokers (13.5versus 8.8% P<0.001). The risk of hypertension was higher 1.31 (1.13-1.52, P < 0.001) in former smokers than in non smokers, irrespective of age and alcohol intake. Both current and former smokers are at risk of systolic hypertension was associated with the number of cigarettes smoked (or) per 10 cigarettes smoked daily 1.13 (1.05-1.21), P < 0.001) and the duration of smoking

cessation (or 0.99 (0.98-1.00), P = 0.01). Thus former smokers are at risk for hypertension, probably because of the higher prevalence of over weight and obese subjects. In this group, current smokers are also at risk of systolic hypertension especially in those subjects aged 60 years or older.

Vijaya Jaiswal, Vikas soni, prafullabhad and Lalit Vaya (2008) investigated the efficacy of nebivolol in hypertension and co-morbid, diabetes in Indian patients with essential hypertension. An observational study was carried out at 177 centers. Speed all over the country patient were treated with nebivolol five milligram once daily dosage schedule and followed up for fair weeks. At every visit sitting blood pressure, pulse rate and development of side effects were monitored. Statistical significance was determined using a 't' test. The data of 658 patients reporting for the first follow up visit was analyzed. This included 405 male and 253 females with a mean age of 51 ±11 years. There was a significant fall in blood pressure by the end of the first week. This continued upto the fourth week of therapy. The mean baseline blood pressure of 164.5/99.mmHg fell significantly to 135-5/84-0 mm Hg. The mean pulse rate also declined from 86.3 ± 10.6 to 74.7 ± 7/6 pm.

Teijeria – Fernandoz E (2008) conducted an experimental study to evaluate the relationships between epicardial adipose tissue (EAT) expression of adiponectin and hypertension. They collected samples of EAT from 116 patients undergone for coronary artery bypass grafting. Samples of subcutaneous adipose tissue (SAT) were harvested from 85 patients. After RNA isolation, the expression of adiponectin was analyzed by real time retro transcriptase. Baseline clinical data were obtained from medical records. EAT expression levels of adiponectin were lower in hypertensives 14.0 + / -3.6 Vs 15.3 +

/ -3.6 arbitrary units after adjustment for age, gender, Body Mass Index, Diabetes mellitus, heart failure, coronary artery disease, total cholesterol and triglyceride levels. However SAT adiponectin in RNA level was similar in hypertensive and non-hypertensive patients (15.3 + / -4.2 Vs 15.3 + / -5G.V). Findings indicate that EAT expression of adiponectin may be associated with hypertension status independently of Coronary Artery Disease or other comorbidities, where as subcutaneous adipose tissue expression does not associate with hypertension.

Rebecca P, Gelber and Barnes (2008) done a prospective study of body mass index and the risk of developing hypertension in man. They studied 13563 initially healthy, non hypertensive men who participated in the physician's health study. They calculated 'Body Mass Index' from self-reported weight and height and defined hypertension as self reported systolic BP > 140 mm Hg, diastolic BP > 90 mm Hg or new antihypertensive medication use. After a median of 14.5 years, 4920 participants developed hypertension. Higher baseline BMI, even with in the 'normal' range, was consistently associated with increased risk of hypertension for men with a Body Mass Index of 22.4 – 23.6, 23.7 – 24.7, 24.8 – 26.4 and > 26.4 kg/m2 were 1.20, 1.31, 1.56 and 1.85 respectively. Further adjustment for diabetes, high cholesterol, and baseline B.P did not substantially alter these results. They found a strong gradient between higher BMI and increased risk of hypertension even among men within then normal and mildly "overweight" BMI range. Approaches to reduce the risk of developing hypertension may include prevention of over weight and obesity.

2. Studies and Literature related to the effect of Garlic intake on hypertension

Karin Ried, Oliver R. Frank, Nigel.P et al, (2008) conducted a study to evaluate the effectiveness of garlic in management of hypertension. Twenty five patients and their essential hypertension were studied. Out of these, 20 patients were not given any antihypertensive drug treatment, other five had put on antihypertensive drugs before including them in the study. These patients were consumed garlic and it was continued for three months. It showed a mean decrease of 4.6 ± 2.8 mm of Hg for SBP in the garlic group compared to placebo ($n = 10$, $P = 0.001$), while the mean decrease in the hypertensive subgroup was 8.4 ± 2.8 mm Hg for SBP ($n = 4$, $P < 0.001$) ad 7.3 ± 1.5mm Hg for DBP ($n = 3$, $P < 0.001$). Regression analysis revealed a significant association between blood pressure at the start of the intervention and the level of B.P reduction (SBP : $R = 0.057$, $P = 0.03$, DBP; $R = - 0.315$, $P = 0.02$). It suggests that garlic preparations are superior to placebo in reducing blood pressure in individuals with hypertension.

Ried K, Brank OR, Stocks NP (2010 June 29) conducted a study, to evaluate the aged garlic extract lowers blood pressure. A double blind parallel randomized placebo – controlled trail involving 50 patients with uncontrolled HT. The active treatment group received four capsules of aged garlic extract (960mg containing 2-4mg Sally kysteine) daily for 12 weeks, and the control group received matching placebos. In patients with uncontrolled hypertension (SBP > / = 140 mm of Hg at baseline), systolic blood pressure was on average 10.2 + / - 4.3 mm Hg ($P = 0.03$) lower in the garlic group compared with control over the 12 weeks treatment period. Aged garlic extract is

superior to placebo in lowering systolic blood pressure in patients with uncontrolled hypertension.

MC Mahon FG, V. Argar R, (1993) conducted a study to evaluate the effect of garlic on reducing blood pressure. A popular garlic preparation containing 1.3% allicin at a large dose (2400mg) was evaluated in this open label study, in 9 patients with severe hypertension (DBP . or = 115mm Hg) sitting blood pressure feel 7/16 (+ / - 3/2 SD) mm of Hg at peak effect approximately 5 hours after the test, with a significant decrease in DBP ($P < 0.05$). Results indicate that this garlic preparation reduce blood pressure in patients with mild to moderate hypertension.

Dr. Andrew Neil and Prof. Christopher Silagy (1994) conducted a study, effect of garlic on blood pressure. Eight trails were identified with same dried garlic powder preparation with data from 415 subjects included in the analysis. Two groups compared the effect of garlic with that of placebo. It showed significant reduction in systolic blood pressure (SBP) + 7.7 mm Hg and diastolic blood pressure was 5.00 mm Hg. The overall poolood mean difference in the absolute change from baseline to final measurement of SBP was greater in the subjects who were treated with garlic than in those treated with placebo.

3. Studies and Literature related to nurses role in educating the patients regarding maintenance of normal blood pressure.

Femila Darlign (2004) conducted a descriptive study to develop self administrated tool to assess hypertension risk status of normal adults in Madurai. Simple random sampling and evaluative approach was used, 25 male and female samples were sedentary work, obesity, excessive intake of salt, non vegetarian diet, habits of smoking, consuming

alcohol, tobacco chewing lack of exercise, stress, lack of medical checkup and type a personality sixty eight percent normal males and females are falling into low risk category (5-51, 6-56 respectively). Majority of male sample subjects (60%) were in the high systolic blood pressure category (120mm of Hg and above) and large number of females sample subjects (80%) were in the moderate systolic blood pressure category (110-119 mmHg). A large number of male and female sample subjects (48%, 64%) were in the moderate diastolic blood pressure category (70-79 mm Hg). The tool is highly reliable ('r' = 94 for males and ;r; = 96 for females). The self administered to tool predicts that the individuals in the moderate risk group have seven times more change of getting hypertension as compared to individuals in the low risk group category.

Christopher C.E (2010) conducted a study to review trails of nurse led interventions for hypertension in primary care to clarify the evidence base, establish whether nurse prescribing is an important intervention and identify areas requiring further study. Compared with usual care, interventions that included a stepped treatment algorithm showed greater reductions in systolic blood pressure (weighted mean diference – 8.2 mm Hg, 95%, confidence interval - 11.5 to 4.9), nurse prescribing showed greater reductions in blood pressure (systolic – 8.9 mm Hg, -12.5 to -5.3 and diastolic -4.0 mm Hg, -5.3 to -2.7), telephone monitoring showed higher achievement of blood pressure targets (relative risk 1.24, 95% confidence interval 1.08 to 1.43) and community monitoring showed greater reduction in blood pressure (weighted mean difference, systolic -4.8mm Hg, 95% confidence interval -7.0 to -2.7 and diastolic -3.5 mm Hg, -4.5 to -2.5). In conclusion, nurse led interventions for hypertension require on algarithum to structure care. Evidence was found of improved outcomes with nurse prescribes from

non- UK heathcare settings. Good quality evidence from UK primary health care is insufficient to support widespread employment of nurses in the management of hypertension within such healthcare systems.

Pippa Oakeshott (2003) conducted a study to review the role for nurse led blood pressure management in primary care. Adequate treatment of high blood pressure reduces the risk of strokes and other cardiovascular events, but current treatment in UK general practice is often inadequate. Nurse led management of people with high blood pressure could lead to improvements due to strict adherence to protocols, agreed target blood pressure better prescribing and compliance and regular follow up. In conclusion after initial evaluation and treatment, most hypertensive patients in primary care with well controlled blood pressure do not need to see a doctor for routine blood pressure management. In line with government policy, there is an increasing role for trained practice nurses and nurse practitioners. Compared with general practice care, nurse led care may benefit from more reliable blood pressure assessment, being more user friendly, accessible and less hurried, and improving understanding, encouraging healthy living and forming an alliance with the patient. There is now a need for randomized-controlled-trails based in general practice to see the management of people with hypertension by specially trained practice-nurses, is associated with better blood pressure control, than routine care.

CHAPTER – III

RESEARCH METHODOLOGY

The research methodology indicates the general pattern of organizing the procedure of gathering a brief description of the method adopted by the investigator in this study.

This chapter includes the research approach, research design, the setting of the study, sample and sampling techniques. It further deals with the development of tool procedures for data collection and plan for data analysis.

RESEARCH APPROACH

An experimental approach was used for this study, to determine the effectiveness of garlic intake in reducing blood pressure.

Since it was not possible to have the entire listing of patient with hypertension in the OPD, randomization was not done. Hence this approach was chosen.

RESEARCH DESIGN

Quasi experimental design with non equivalent control group pre test, post test was used in this study.

Groups	**Pre test**	**Manipulation**	**Post test**	
			Day 7	**Day 15**
Experimental group	O_1	X	O_2	O_3
Control group	O_1		O_2	O_3

Independent variable – Garlic intake

Dependent variable – Blood pressure

O_1 - Blood pressure level before consuming.

O_2 - Blood pressure level after 7 days of consuming garlic.

O_3 - Blood pressure level after 15 days of consuming garlic.

X - Garlic intake.

SETTING OF THE STUDY

The study was conducted at Seelovam hospital at Umachikulam, Madurai. It is a general hospital. It has 25 beds. It is 8 kilometers away from the Sacred Heart Nursing College. There were 100 patients attend the OPD per day. Hospital with General Medical Ward, Bio chemistry lab, ECG, USG, Echocardiogram. Approximately 800 cases per month visits for consultation and treatment for hypertension.

STUDY POPULATION

The Population for the study was patients with hypertension attending the OPD of Seelovam hospital.

SAMPLE

Patients with hypertension who fulfilled the inclusion criteria.

SAMPLE SIZE

Sample size was 60 patients with Hypertension. Among them 30 patients were in experimental-group and 30 patients were in control-group.

SAMPLE TECHNIQUE

'Purposive sampling technique' was used for this study.

CRITERIA FOR SAMPLE SELECTION

The sample selection was done based on the following inclusion and exclusion criteria.

INCLUSIVE CRITERIA

- Subjects with hypertension in the age group of 35-60 years
- Patients who were willing to participate.
- Both female & male clients.
- Subjects speaking and understanding Tamil / English.
- Patients with mild hypertension (systolic 130-139 mmHg & diastolic 80-89 mmHg) and moderate hypertension (systolic 140-159 mmHg & diastolic 90-99 mmHg).

EXCLUSIVE CRITERIA:

- Subjects who are not willing to participate.
- Subjects with complication like heart failure, neuropathy, hormonal disorder etc
- Subjects with severe blood pressure > 180/> 110 mmHg.

RESEARCH TOOL & TECHNIQUE

The instrument used for this study consisted of 4 sections.

***PART I*:**

Demographic Data: It includes age, sex, educational status, occupation, income marital status.

PART II:

Clinical profile: Time of diagnosis**,** Duration of treatment**,** Previous medical history and surgical history**,** Type of treatment, family history of hypertension.

PART III:

Life style pattern: Type of diet**,** Exercise, Smoking**,** Physical activity, BMI.

PART IV:

Biophysiological measurement (sphygmomanometer) was used to assess the patient's blood pressure level.

TESTING OF THE TOOL

VALIDITY

The tool was evaluated and established by submitting the tool to five experts in the field medicine for validity. Tool was modified based on the suggestion of experts.

RELIABILITY:

'Inter-rater reliability' was used to establish the reliability of the tool.

For the instrument sphygmomanometer, the reliability certificate was obtained from Quality concepts laboratory at Madurai.

Calibrated on - 19.04.2010

Next calibration due on - 19.04.2011 (user defined)

Standards followed - IS 3390

Allowable tolerance as per IS 3390 + 2 mmHg or -3 mmHg

Instrument status - Deviations are within specified limits

DEVELOPMENT OF INTERVENTION

DEFINITION:

In this study, it is a herb that relaxes the blood capillaries and vessels thereby reducing the blood pressure level.

It denotes that Garlic is a powerful agent for reduction of blood pressure. In this study, the patients with hypertension were given 4 large cloves of garlic a day (24gm), which was boiled in water and given in morning at 7am for continuous 15 days for the purpose of reduction in blood pressure.

AIM:

To reduce the blood pressure level of patients with hypertension.

STEPS IN PROCEDURE:

- Establish and maintain a trust worthy relationship with a client.
- Do preliminary assessment (checking height, weight and blood pressure).
- Explain the benefits of consuming garlic liker reduction of blood pressure, cholesterol and reducing the risk of cancer and cleansing the blood.
- Pack the garlic. Each pack consists of 4 large cloves of garlic. Give the patients 7 packs of garlic and advice them to take a single pack per day.
- Educate them to take garlic which should be boiled in water for 10 mts and advice them to take garlic, early morning (7.am) at empty stomach.
- Ask the client to monitor the cloves intake chart.
- Advice them to come for follow-up at 7^{th} day and 15^{th} day.

PILOT STUDY:

In order to test the feasibility, relevance and practicability of the study, pilot study was conducted among 6 patients with hypertension (among that 3 for experimental and 3 patients for control group) in the same manner as that of the original study in private hospitals at Madurai. Data were analyzed to find out the suitability of statistical method. It revealed that the study was feasible.

DATA COLLECTION PROCEDURE

Before starting the study, the researcher obtained formal permission to conduct the study from the hospital authority and the dissertation committee of Sacred Heart Nursing College.

Study was conducted for a period of 6 weeks. The researcher introduced herself to the selected samples and verbal consent was obtained from each subject after giving assurance of confidentiality. Each day data was collected from the available sample. The patients participated with interest. The subjects were divided in to experimental group and control group. Initially the subjects were interviewed in order to collect demographic data and information related to disease condition and duration of antihypertensive treatment. After wards the investigator assessed their blood pressure level by using sphygmomanometer and body mass index was checked at the same time, followed by this samples were explained about garlic intake for a period of 6 weeks. This was done only to the experimental group. Blood pressure level was rechecked on the 7^{th} day and 15^{th} days for both the groups by using the same sphygmomanometer

PLAN FOR DATA ANALYSIS

The data analysis was done according to the objectives of the study. Both descriptive and inferential statistics were used.

PROTECTION OF HUMAN RIGHTS

The pilot study and main study were conducted after the approval of the research committee of Sacred Heart Nursing College, Madurai. Prior to the study, oral consent of each study subject was obtained before starting the data collection. Assurance was given to the subjects, that confidentiality would be maintained.

CHAPTER – IV

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretation of the data collected from selected group of samples who have received Garlic therapy. The data collected were tabulated, analyzed and presented based on the objectives and hypothesis.

It consists of the following sections.

SECTION I:

1. It deals with demographic profile of the samples.
2. This provides frequency and percentage distribution of samples on the basis of their disease condition
3. This provides frequency and percentage of samples according of dietary pattern
4. This provides frequency and percentage of samples according to BMI

SECTION II:

1. It deals with distribution of patients with hypertension according to the level of blood pressure before and after administration of garlic therapy
2. Comparison of mean pre test and post test blood pressure level of experimental group of patients with hypertension.
3. Comparison of mean post test blood pressure level between experimental group and control group

SECTION III:

It deals with the association between blood pressure level of experimental group and selected demographic variables such as age, sex, education, occupation, duration of illness duration of treatment, dietary pattern, habit of smoking, BMI.

SECTION – I

DEMOGRAPHIC PROFILE OF SAMPLES:

TABLE I:

This provides frequency and percentage distribution of samples according to their demographic data.

Distribution of samples according to the selected demographic data

(N = 60)

Demographic Characteristics	Experimental Group (n = 30)		Control Group (n = 30)		Total	
	f	%	f	%	f	%
Age (in years)						
a. 36-40 yrs	2	6.6	1	3.3	3	5
b. 41-50 yrs	2	6.6	3	10.0	5	8.33
c. 46-50 yrs	5	16.6	7	23.3	12	20
d. 51-55 yrs	8	26.6	7	23.3	15	25
e. 56-60 yrs	6	20.0	7	23.3	13	21.6
f. Above 61 years	7	23.3	5	16.6	12	20
Sex						
a. Male	11	36.6	17	56.6	28	46.6
b. Female	19	63.3	13	43.3	32	53.3
Educational Status						
a. χχχPrimary	20	66.6	14	46.6	34	56.6

Table cont….

b. Secondary	6	20	13	43.3	19	31.6
c. Higher Secondary	4	13.3	3	10	7	11.6
d. Graduates	0	0	0	0	0	0
Occupation						
a. Sedentary	9	30	11	36.6	20	33.3
b. Moderate	19	63.3	12	40	31	57.6
c. Heavy	2	6.6	7	23.3	9	15
Religion						
a. Hindu	22	73.3	19	63.3	41	68.3
b. Christian	7	23.3	10	33.3	17	28.3
c. Muslim	1	3.3	1	3.3	2	3.33
d. Others	0	0	0	0	0	0
Marital Status						
a. Married	29	96.6	30	100	59	98.3
b. Unmarried	1	3.3	0	0	1	1.66

Table I summarizes that majority of the sample 8 out of 30 (26.6%) in the experimental group, and 7 out of 30 (23.3%) in the control group were between the age group of 51-55 years.

Regarding sex, the majority of the samples 19 out of 30 (63.3%) in experimental group were females and 17 out of 30 (56.6%) in control group were males.

Regarding educational status, 20 out of 30 (66.6%) in the experimental group and 14 out of 30 (46.6%) in the control group were of primary school education.

Regarding the religion, it indicates that the majority 22 out of 30 (73.3%) in the experimental group and 19 out of 30 (63.3%) in the control group were Hindus.

Regarding occupation, it shows that the majority 19 out of 30 (63.3%) in the experimental group were moderate workers and 12 out of 30 (40%) in the control group were moderate workers.

Regarding marital status, it shows that majority, 29 out of 30 (96.6%) in experimental group and 30 out of 30 (100%) in control group were married.

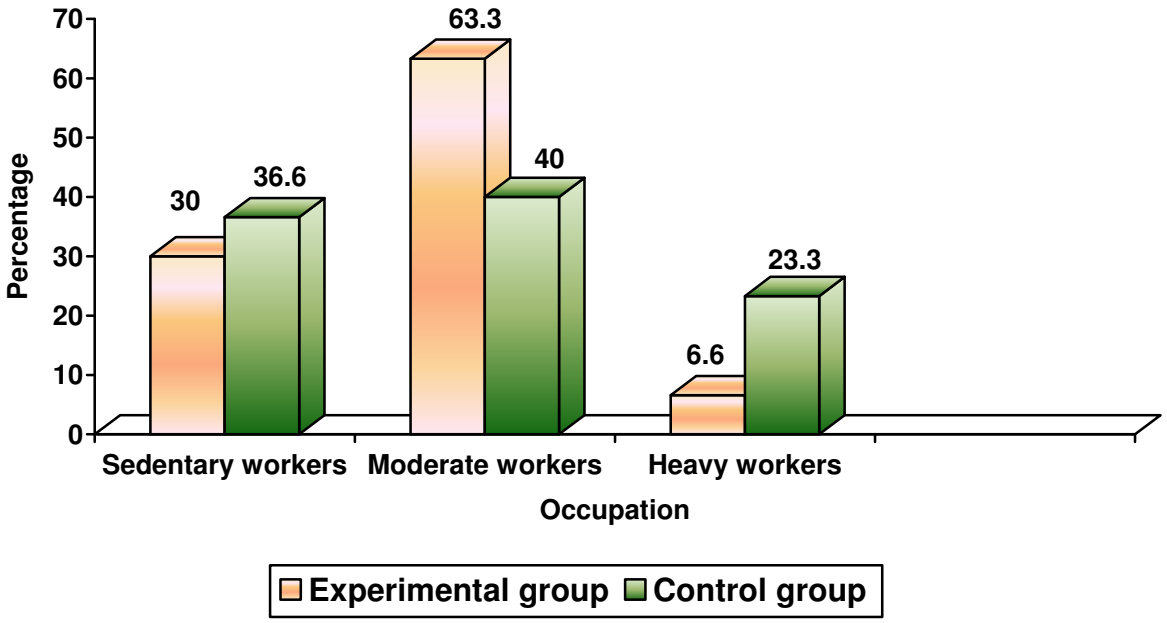

Fig. 2: Distribution of sample in terms of occupation

Table 2:

Frequency and percentage distribution of samples on the basis of their disease condition.

(N = 60)

Clinical Profile	Experimental Group (n = 30)		Control Group (n = 30)	
	f	**%**	**f**	**%**
Duration of Illness:				
a. < 3 yrs	18	60	17	56.6
b. 3-6 yrs	7	23.3	11	36.6
c. > 6 yrs	5	16.6	2	16.6
Duration of Treatment				
a. < 3 yrs	19	63.3	18	60
b. 3-6 yrs	6	20	12	40
c. > 6 yrs	5	16.6	0	0
Type of Treatment				
a. Ayurvedic	0	0	0	0
b. Allopathic	30	100	30	100
c. Homeopathic	0	0	0	0
Any History of Past minor illness				
a. Yes	13	43.3	11	36.6
b. No	17	56.66	19	63.3

Table cont….

Did you suffer from any of other major disease				
a. Cardiac disease	0	0	0	0
b. Renal disease	0	0	0	0
c. Diabetes mellitus	0	0	0	0
d. Nil	30	100	30	100
Classification of severity of illness				
a. Mild	12	40	14	46.6
b. Moderate	18	60	16	20
c. Severe	0	0	0	0
Family history of hypertension				
a. Both parents	12	40	8	26.6
b. Mother	4	13.3	7	23.3
c. Father	3	10	8	26.6
d. none	11	36.6	7	23.3
Treatment Taken				
a. Regular	19	63.3	20	66.6
b. Irregular	11	36.6	10	33.3

Table shows that 18 out of 30 (60%) in the experimental group and 17 out of 30 (56.6%) in the control group have hypertension for the duration of less than 3 yrs.

Regarding duration of treatment, 19 out of 30 (63.3%) in the experimental group and 18 out of 30 (60%) in the control group had taken treatment less than 3 yrs.

Regarding type of treatment shows that 30 out of 30 (100%) had taking allopathic treatment in both groups.

Regarding the history of part illness shows that, 17 out of 30 (56.6%) in experimental group, 19 out of 30 (63.3%) in control group had no past illness.

Regarding any other diseases shows that, 30 out of 30 (100%) had no other diseases in both the groups.

Regarding severity of illness, 18 out of 30 (60%) in the experimental group and 16 out of 30 (20%) in the control group had the moderate illness.

Regarding family history of hypertension, it indicates that the majority 12 out of 30 (40%) in experimental group, and 8 out of 30 (26.6%) in control group were both the parents.

Regarding regular treatment shows, 19 out of 30 (63.3%) in experimental group and 20 out of 30 (66.6%) in control group have taken regular treatment.

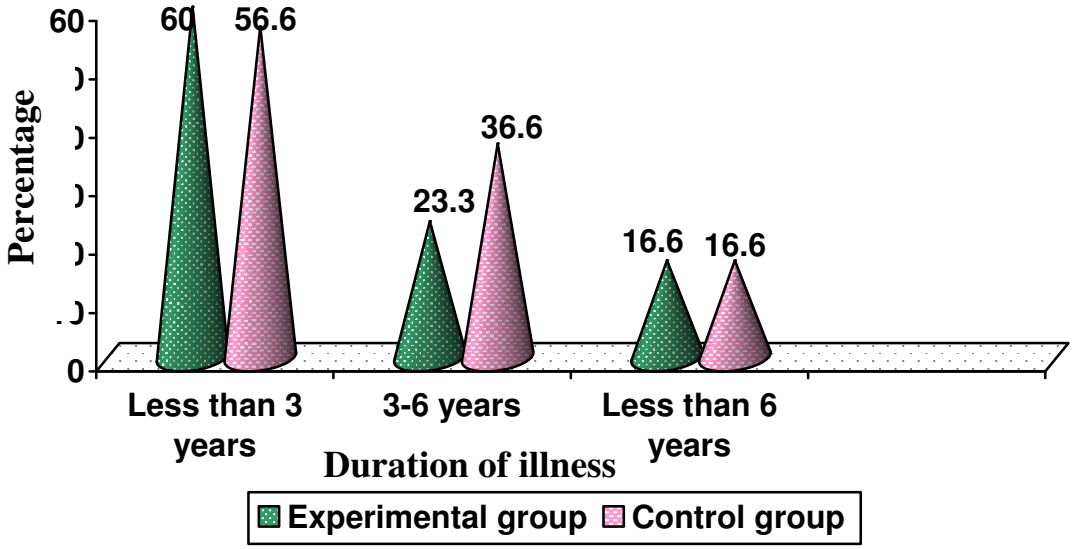

Fig 3: Distribution of sample in terms of duration of illness

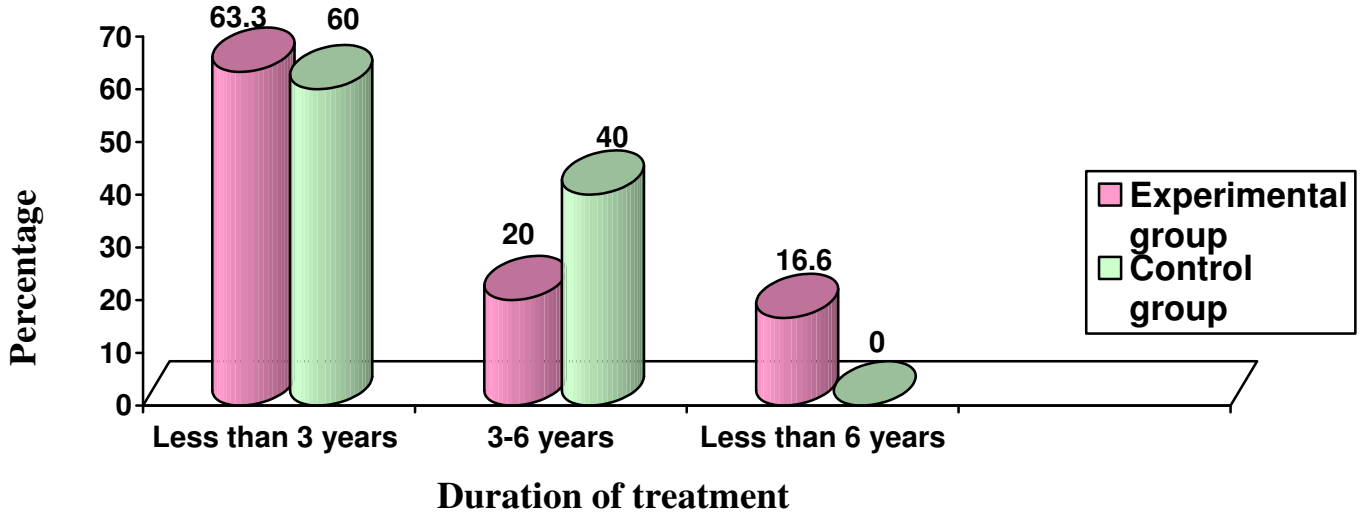

Fig 4: Distribution of sample in terms of duration of treatment

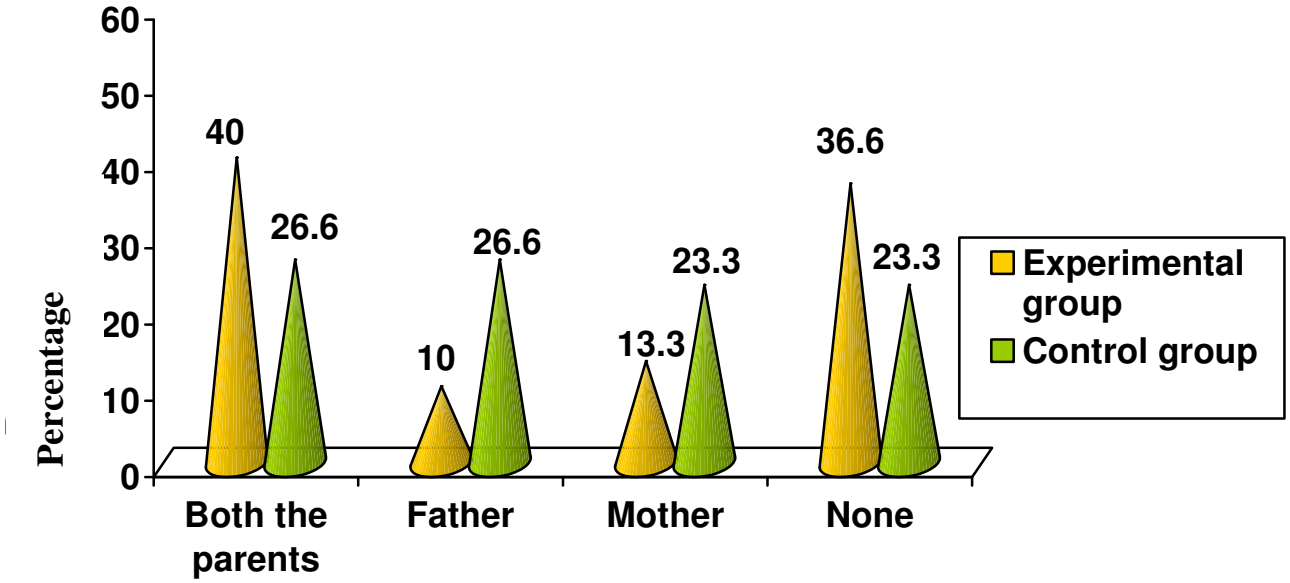

Fig 5: Distribution of sample in terms of family history of hypertension

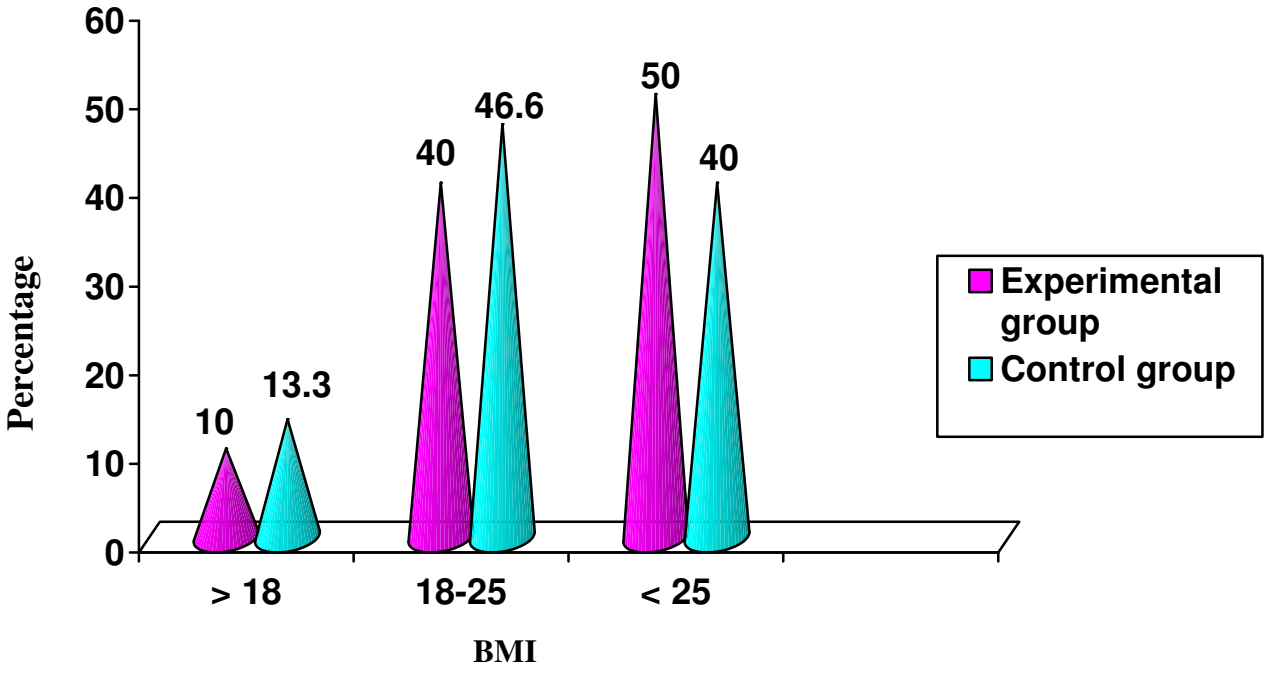

Fig 6: Distribution of samples in terms of BMI

Table 3:

Frequency and percentage distribution of samples according to their lifestyle pattern.

(N = 60)

Dietary pattern	Experimental Group (n = 30)		Control Group (n = 30)	
	f	%	f	%
Type of Diet				
a. Vegetarian	7	23.3	5	16.6
b. Non vegetarian	23	76.6	25	83.3
Following hypertensive Diet				
a. Yes	23	76.6	18	60
b. No	7	23.3	12	40
Habit of smoking				
a. Yes	6	20	12	40
b. No	24	80	18	60
How long smoking				
a. 1-5 yrs	0	0	7	23.3
b. 6-10 yrs	0	0	3	10
c. 11-15 yrs	3	10	0	0
d. Above 15 yrs	3	10	2	16.6
e. Nil	24	80	18	60

Table cont….

Regular Exercise	3	10	2	6.6
a. yes	27	90	28	93..3
b. No				
BMI	3	10	4	13.3
a. Less than 18	12	40	14	46.6
b. 18-25	15	50	12	40
c. More than 25				

Table 3 shows regarding lifestyle pattern in the experimental group 7 out of 30 (23.3%) followed vegetarian diet, 23 out of 30 (76.6%) followed mixed diet, where as in the control group, 5 out of 30 (16..6%) followed vegetarian diet, 25 out of 30 (83.3%) followed mixed diet.

Regarding hypertensive diet, 23 out of 30 (76.6%) taken hypertensive diet in experimental group, 18 out of 30 (60%) taken hypertensive diet in control group.

Regarding habit of smoking, 24 out of 30 (80%) in the experimental group have no habit of smoking where as in control group 18 out f 30 (60%) were not having the habit of smoking.

Regarding regular exercise, 27 out of 30 (90%) in the experimental group have not followed any exercise & 28 out of 30 (93.3%) in control group have not followed any exercise.

Regarding BMI 15 out of 30 (50%) in experimental group were more than 25 and 14 out of 30 (46.6%) in control group were 18-25.

SECTION -II

Table 4:

The Distribution of blood pressure level in experimental group and in control group before (1st day) and after (7th day) administration of garlic therapy. (N=60)

Level of Blood Pressure	Experimental Group(n=30)				Control Group(n=30)			
	Pre test 1st day		Post test 7th day		Pre test 1st day		Post test 7th day	
	f	%	f	%	f	%	f	%
Systolic								
< 120	0	0	4	13.3	0	0	0	0
121-139	12	40	14	46.6	7	23.3	9	30
140-159	17	56.6	12	46	21	70	19	63.3
≥ 160	1	3.3	0	0	2	6.6	2	6.6
Diastolic								
< 80	0	0	0	0	0	0	0	0
81-89	8	26.6	17	56.6	3	10	4	13.3
90-99	14	46.6	11	36.6	20	66.6	19	63.3
≥ 100	8	26.6	12	6.6	7	23.3	7	23.3

Table 4 shows regarding systolic blood pressure level 12 out of 30 (40%) were between 121-139 mmHg, where as in the post test(7th day) 14 out of 30 (46.6%) were between 121-139 mmHg and 17 out of 30 (56.6%) were between 140-159 mmHg, where

as in the post test (7th day) 12 out of 30 (46%) were between 140-159 mmHg in the experimental group.

Regarding diastolic blood pressure level 8 out of 30 (26.6%) were between 81-89 mmHg, where as in post test (7th day) 17 out of 30 (56.6%) were between 81-89 mmHg and 14 out of 30(46.6%) were between 90-99 mmHg, where as in post test (7th day) 11 out of 30 (36.6%) were between 90-99 mmHg in the experimental group.

In control group 7 out of 30 (23.3%) had 121-139 mmHg, where as in post test (7th day) 9 out of 30 (30%) had 121-139 mmHg and 21 out of 30 (70%) had 140-159 mmHg, where as in post test (7th day) 19 out of 30 (63.3%) had 140-159 mmHg.

Regarding diastolic blood pressure level 20 out of 30 (66.6%) had between 90-99 mmHg, where as in post test (7th day) 19 out of 30 (63.3%) had between 90-99 mmHg and 7 out of 30 (23.3%) had between >100 mmHg, where as post test (7th day) 7 out of 30 (23.3%) had between >100 mmHg.

Table 5:

The Distribution of blood pressure level in experimental group and in control group before (1st day) and after (15th day) administration of garlic therapy.

N = 60

Level of Blood Pressure	Experimental Group(n=30)				Control Group(n=30)			
	Pre test 1st day		Post test 15th day		Pre test 1st day		Post test 15th day	
	f	%	f	%	f	%	F	%
Systolic								
< 120	0	0	7	23.3	0	0	0	0
121-139	12	40	23	76.6	7	23.3	16	53.3
140-159	17	56.6	0	0	21	70	14	46.6
≥ 160	1	3.3	0	0	2	6.6	0	0
Diastolic								
< 80	0	0	6	20	0	0	0	0
81-89	8	26.6	19	63.3	3	10	16	53.3
90-99	14	46.6	4	13.3	20	66.6	11	36.6
≥ 100	8	26.6	1	3.3	7	23.3	3	10

Table 5 shows regarding systolic blood pressure level 12 out of 30 (40%) were between 121-139 mm of Hg in pre test, where as in post test (15th day) 23 out of 30 (76.6%) were between 121-139 mm of Hg and, 17 out of 30 (56.6%) were between 140-

159 mm of Hg in pre test, where as in post test(15th day) none of them were between 140-159 mm of Hg in the experimental group.

Regarding diastolic blood pressure level, 8 out of 30 (26.6%) were between 81-89mm of Hg in pre test, where as in post test (15th day) 19 out of 30 (63.3%) were between 81-89 mm of Hg and 14 out of 30 (46.6%) were between 90-99 mm of Hg in pre test, where as in post test (15th day), 4 out of 30 (13.3%) were between 90-99 mm of Hg in the experimental group.

In control group, 7 out of 30 (23.3%) had 121-139 mm of Hg, where as in post test (15th day) 16 out of 30 (53.3%) had 121-139mm of Hg and 21 out of 30 (70%) had 140-159 mm of Hg where as in post test (15th day) 14 out of 30 (46.6%) had 140-159 mm of Hg in control group.

Regarding diastolic blood pressure level, 20 out of 30 (66.6%) had 90-99 mm of Hg where as in post test (15th day) 11 out of 30 (36.6%) had 90-99mm of Hg and 7 out 30 (23.3%) had ≥ 100 mm of Hg, where as in post test (15th day) 3 out of 30 (10%) had ≥ 100 mm of Hg in control group.

Table 6:

Comparison between mean pre test and mean post test in blood pressure level among experimental and control group. (N=60)

Measurement	Experimental Group (n = 30)			Control Group (n = 30)		
	Pre test	Post test		Pre test	Post test	
	1st day	7th day	15th day	1st day	7th day	15th day
Systolic	140.3	129	118.6	141.6	140	135
Diastolic	90	85	80	91.3	91	85.6

Normal Blood Pressure Level- 120/80 mmHg

Table 6 presents that in the experimental group, the mean pre-test Blood pressure level on 1st day 140.3 and on 7th day 129 and it was declined to 118.6 on 15th day, where as in control group, there was only 0.4 difference from mean pre test on 1st day to mean post test on 7th day and it was slightly decreased to 135 on 15th day.

Therefore, it was concluded that garlic therapy is effective in reducing blood pressure.

Table 7:

Comparison of post test blood pressure measurements between experimental group and control group (N=60)

Measurement	Experimental Group(n=30)		Control Group (n = 30)	
	Systolic	Diastolic	Systolic	Diastolic
Normal	19	17	3	9
Mild	11	9	23	19
Moderate	0	4	4	2
Severe	0	0	0	0

WHO Classification of blood pressure:

Normal - 120/80 mmHg

Mild -140/90 mmHg

Moderate -160/100 mmHg

Severe -180/110 mmHg

Table 7 summarizes that ,in the experimental group 19 subjects had the mean post systolic measurement in normal and 11 subjects had mild blood pressure, where as in control group only 3 were in normal, and only 4 subjects were in moderate category. Likewise, mean post test diastolic measurement revealed 17 subjects were in normal, and only 4 subjects were in moderate category in experimental group, where as 2 subjects in control group had moderate, and only 9 subjects were in normal diastolic blood pressure level. So the researcher accepts that, garlic therapy is effective.

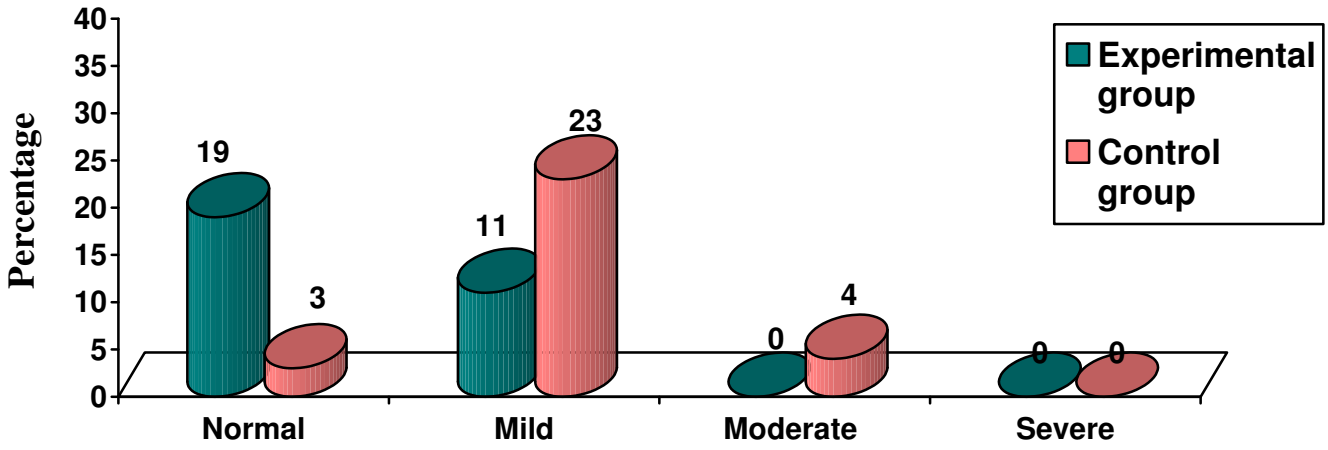

Fig 6: Comparison of post test blood pressure measurement between experimental group and control group for systolic blood pressure.

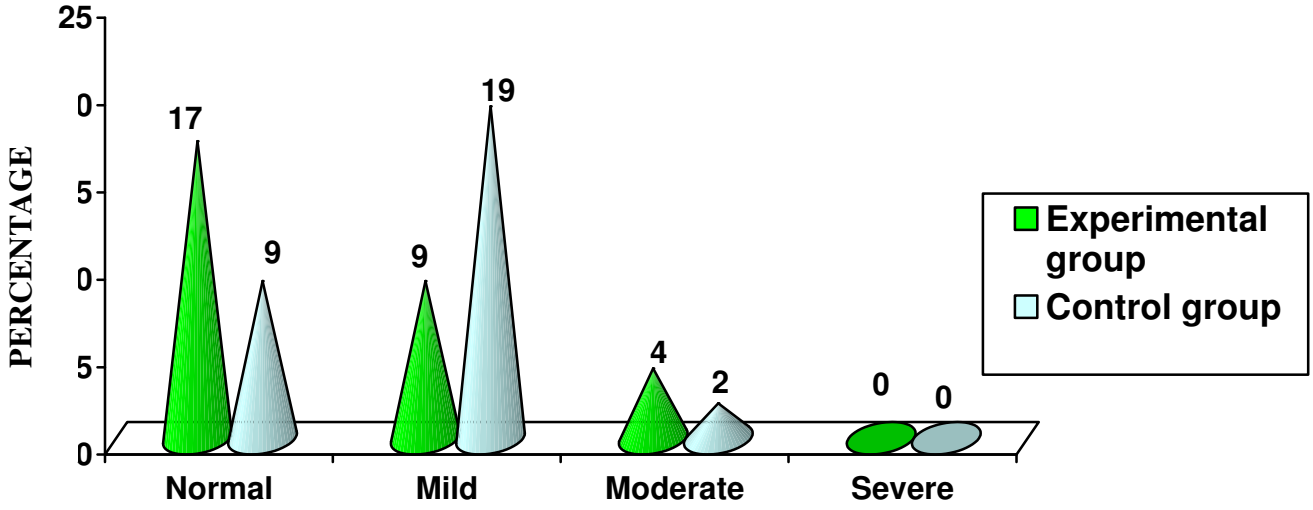

Fig 7: Comparison of post test blood pressure measurement between experimental group and control group for diastolic blood pressure

SECTION – III

Table 8:

Comparison of mean pre test and mean post test blood pressure level in experimental group. (N=30)

Test	Mean	Mean Difference	SD	't' test	DF
Systolic					
Pre test	140.3	21.7	9.96	15.2	*29
Post test	118.6		5.41		
Diastolic					
Pre test	90	10	7.3	7.6	*29
Post test	80		6.82		

*Significance at 0.05 level

To compare the mean pre test and post test blood pressure level of sample who had garlic therapy, the null hypothesis was stated as follows:

H-1: There will be no significant difference between the mean pre test Blood Pressure level and mean post test Blood Pressure level of patients in the experimental group for administration of garlic therapy.

Table 8 presents that in the experimental group the mean post test systolic Blood Pressure level 118.6 is lower than the mean pre test systolic Blood Pressure level 140.3 and the mean post test diastolic, Blood Pressure level of 80 is lower than the mean pre test diastolic Blood Pressure level 90.

The obtained ‘t’ value for systolic 15.2 and the obtained ‘t’ value for diastolic 7.6 is statistically significant at 0.05 level. This indicates that the mean difference of systolic 21.7 and the mean difference of diastolic 10 is a true difference. So the researcher accepts the research hypothesis and rejects the null hypothesis. It implies that the garlic had significant effect on the reduction of the sample blood pressure in the experimental group.

Table 9:

Comparison of mean post test blood pressure level between experimental group and control group. (N=60)

Group	Mean	Mean Difference	SD	't' test	DF
Systolic					
Experimental group	118.6	16.4	5.41	9.64	*58
Control group	135		8.46		
Diastolic					
Experimental group	80	5.6	6.82	3.27	*58
Control group	85.6		7.48		

*Significance at 0.05 level

To compare the mean post test B.P level of the experimental group and control group the null hypothesis was stated as follows.

H-2: There will be no significant difference between the mean post test blood pressure levels among experimental and control group.

Table 8 summarizes that in the experimental group the mean post test B.P level for systolic 118.6 and for diastolic 80 is lesser than the mean post test B.P level for systolic 135 and for diastolic 85.6 of control group. The obtained 't' value for systolic 9.64 and diastolic 3.27 is statistically significant at 0.05 level this indicates that the mean difference of systolic 16.4 and diastolic 5.6 is a true difference and has not occurred by chance. So the researcher accepts the research hypothesis and rejects the null hypothesis.

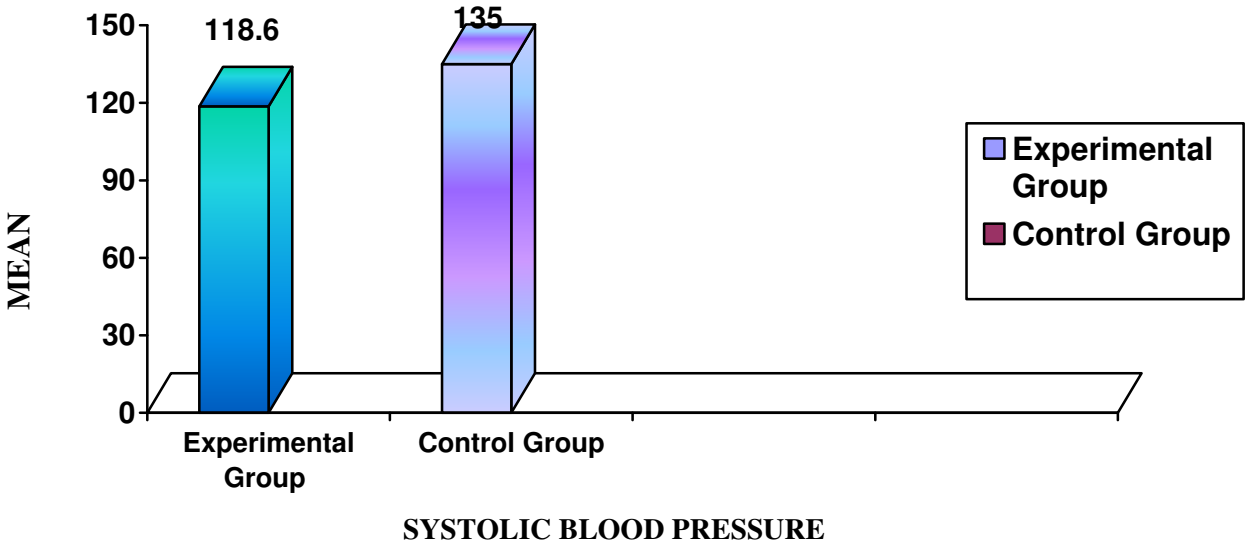

Fig 8: Comparison of mean post test blood pressure level between experimental group and control group for systolic blood pressure.

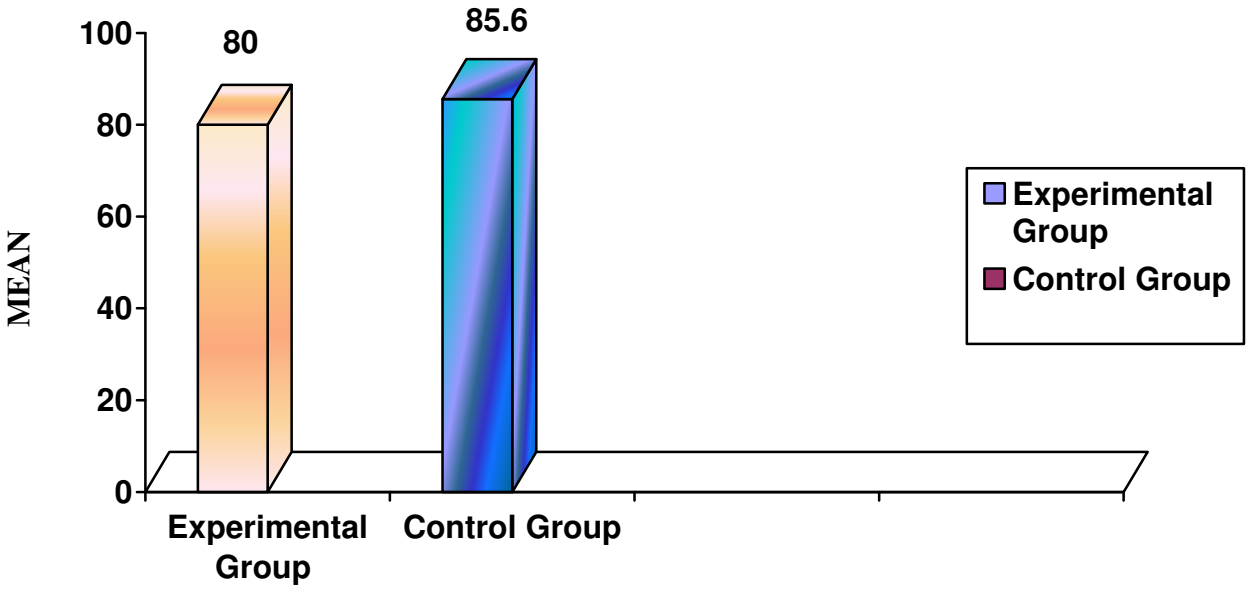

Fig 9: Comparison of mean post test blood pressure level between experimental group and control group for diastolic blood pressure.

SECTION – IV

Table 10:

Association between post test Systolic Blood pressure level of experimental group and selected demographic variables. (N=30)

Demographic Variables	Systolic Blood Pressure Level			
	Above Mean	Below Mean	N	Chi-square
Age (in years)				
a. Above 55	6	7	13	1.02
b. Below 55	11	6	17	
Sex				
a. Male	5	5	10	0.615
b. Female	7	13	20	
Educational status				
a. Primary	7	11	18	0.06
b. Higher secondary	5	7	12	
Occupation				
a. Sedentary worker	8	10	18	
b. Moderate	5	6	11	0.93
c. Heavy	0	1	1	
Family history of HT				
a. Both parents	5	7	12	
b. Father	1	3	4	0.59

Table cont….

c. Mother	1	3	4	
d. None	4	6	10	
Duration of illness				
a. Less than 3 yrs	9	11	20	0.05
b. More than 3 yrs	5	5	10	
Duration of treatment				
a. Less than 3 yrs	9	11	20	0.8
b. More than 3 yrs	6	4	10	
Type of Diet				
a. Vegetarian	2	5	7	2.91
b. Non vegetarian	15	8	14	
Regular exercise				
a. Yes	5	11	6	3.26
b. No	9	5	14	
Habit of smoking				
a. Yes	4	2	6	3.75
b. No	6	18	24	
BMI				
a. Less than 18	0	1	1	
b. 18-25	5	6	11	0.76
c. More than 25	8	10	18	

To find out if there is any association between blood pressure level of the subjects and the selected demographic variables (age, sex, occupation, education, duration of illness, duration of treatment, type of diet, regular exercise habit of smoking, BMI) the null hypothesis was stated as follows.

H-3: There will be no association between the post test blood pressure level among patient with hypertension and the selected demographic variables.

In order to find out the association between the systolic blood pressure level and age χ test was computed. For the convenience of computation and tabulation the researcher had dubbed the age group an above 50 and below 50 years.

The obtained χ value of 1.02 at df (1) was not significant. So there is no association between Blood pressure level and age.

Regarding Blood pressure and sex, the calculated χ value was 0.615 at df (1) was not significant at 0.05 level.

Regarding Blood pressure and education, the calculated χ value was 0.06 at df(1) was not significant at 0.05 level.

Regarding Blood pressure and education, the calculated χ value was 0.933 at df(2) was not significant.

It was found that there is no association between Blood pressure and family history of Hypertension. The obtained χ is 0.59 at df (3) was not significant.

Regarding Blood pressure & duration of treatment the calculated χ was 0.8 at df (1) was not significant at 0.05 level.

Regarding Blood pressure & duration of treatment, the calculated χ was 0.8 at df (1) was not significant at 0.05 level.

It was found that there was no association between Blood pressure level and diet. The obtained χ was 2.91 at df (1) was not significant at 0.05 level.

Regarding regular exercise & Blood pressure level, the calculated χ value 3.26 at df (1) was not significant at 0.05 level. There was no association between Blood pressure level and regular exercise.

Regarding Blood pressure level and habit of smoking there was no association. The obtained value 3.75 at df(10) was not significant at 0.05 level.

There was no association of systolic blood pressure level and the selected demographic data such as age, sex, education, occupation, duration of illness, duration of treatment, family history of hypertension, dietary pattern, and BMI. So the researcher accepts the null hypothesis and rejects the research hypothesis. The reason may be due to the small size of the sample.

Table 11:

Association between post test Diastolic Blood pressure level of experimental group and selected demographic variables. (N=30)

Demographic Variables	Diastolic Blood Pressure Level		N	Chi-square
	Above Mean	Below Mean		
Age (in years)				
c. Above 50	6	6	12	0.35
d. Below 50	11	7	18	
Sex				
c. Male	10	7	17	0.05
d. Female	7	6	13	
Educational status				
c. Primary	13	11	20	0.61
d. Higher secondary	5	7	10	
Occupation				
d. Sedentary worker	7	8	15	
e. Moderate	7	5	12	0.58
f. Heavy	2	1	3	
Family history of HT				
e. Both parents	6	5	11	
f. Father	2	2	4	
g. Mother	2	1	3	0.72
h. None	5	7	12	

Table cont….

Duration of illness				
c. Less than 3 yrs	11	9	20	0.2
d. More than 3 yrs	5	5	10	
Duration of treatment				
c. Less than 3 yrs	11	9	20	0.05
d. More than 3 yrs	6	4	10	
Type of Diet				
c. Vegetarian	3	4	7	1.69
d. Non vegetarian	16	7	23	
Regular exercise				
c. Yes	11	5	16	0.05
d. No	9	5	14	
Habit of smoking				
c. Yes	5	1	6	0.16
d. No	18	6	24	
BMI				
a. Less than 18	2	8	10	
b. 18-25	7	5	12	8.3*
c. More than 25	7	1	8	

In order to find out the associating between the diastolic blood pressure level and age chi-square test was computed. For the convenience of computation and tabulation the researcher had clubbed the age group as above 50 and below 50 years.

The obtained value of chi-square 0.35 at df (1) was not significant.

Regarding Blood pressure and sex, the calculated χ value was 0.05 at df (1) was not significant at 0.05 level.

Regarding Blood Pressure and education status, the calculated value of χ was 0.61 at df (1) was not significant.

Regarding Blood Pressure and occupation, the calculated value of χ was 0.58 at df (2) was not significant.

Regarding family history of Hypertension, the calculated value of χ was 0.72 at df (3) was not significant.

It was found that there is no association between Blood pressure level and duration of illness. The obtained χ is 0.2 at df (1) was not significant.

Regarding Blood pressure level and diet, the calculated value χ as 1.69 at df(1) was not significant at 0.05 level.

Regarding blood pressure and regular exercise, the calculated value is 0.05 at df(1) was not significant.

Regarding blood pressure and habit of smoking, the calculate value of χ was 0.16 at df (1) was not significant.

Regarding blood pressure and BMI, the calculated value is 8.3 at df (2) was significant at 0.05 level. So there is an association between blood pressure level and BMI.

Since the association could be established between the post-test mean diastolic blood pressure with only BMI. The researcher is unable to reject the null hypothesis and partially accepts the research hypothesis.

CHAPTER –V

DISCUSSION

The study was conducted to evaluate the effectiveness of garlic therapy in maintaining blood pressure level, among patients with hypertension in selected hospital at Madurai .The study findings are discussed in this chapter with reference to the objectives, the framework and hypothesis stated in chapter I.

1.Demographic profile of the sample

With regard to age, 26.6% were between 51-55 years of age in experimental group, where as in control group, 23.3% were between 51-55 years of age.

With regard to sex ,63.3% were females in experimental group , where as in control group ,56.6% were males.

With regard to distribution by educational status, 66.6% were of primary school education in experimental group, where as, in control group, 46.6% were of primary school education.

Regarding religion, in the experimental group, 73.3% were Hindus and in control group 63.3% were Hindus.

Regarding occupation, 63.3% were moderate workers and 40% were moderate workers.

Regarding duration of illness, in experimental group 60% had less than 3 yrs duration of illness. Where as, in control group 56.6% had less than 3 years duration of illness.

Regarding duration of treatment, 63.3% in the experimental group and 60% in the control group had taken treatment less than 3 yrs.

Regarding type of treatment shows that 100% are taking allopathic treatment in both groups.

Regarding the history of past illness shows that, 56.6% in experimental group, 63.3% in control group had no past illness.

Regarding any other diseases shows that, 100% had no other diseases in both the groups.

Regarding family history of hypertension, it indicates that 40% in experimental group, and 26.6% in control group were both parents.

Regarding regular treatment shows, 63.3% in experimental group and 66.6% in control group had taken regular treatment.

Regarding dietary pattern in the experimental group, 23.3% followed vegetarian diet, 76.6% followed mixed diet, where as in the control group, 16..6% followed vegetarian diet, 83.3% followed mixed diet.

Regarding hypertensive diet,76.6% taken hypertensive diet in experimental group, 60% had taken hypertensive diet in control group.

Regarding habit of smoking, 80% in the experimental no habit of smoking where as in control group, 60% were not having the habit of smoking.

Regarding regular exercise, 90% in the experimental group did not follow any exercise & 93.3% in control group did not follow any exercise.

Regarding BMI, 50% were more than 25 in experimental group,46.6% were 18-25 in control group.

2. The first objective of the study was to find out the pre test and post test level of blood pressure among the experimental group of patients with hypertension who had the intake of garlic.

Table 6 presents that in the experimental group, the mean pre-test Blood pressure level on 1st day 140.3 and on 7th day 129 and it was declined to 118.6 on 15th day, where as in control group, there was only 0.4 difference from mean pre test on 1st day to mean post test on 7th day and it was slightly decreased to 135 on 15th day.

Table 8 presents that in the experimental group the mean post test systolic Blood Pressure level 118.6 is lower than the mean pre test systolic Blood Pressure level 140.3 and the mean post test diastolic, Blood Pressure level of 80 is lower than the mean pre test diastolic Blood Pressure level 90.

The obtained 't' value for systolic 15.2 and the obtained 't' value for diastolic 7.6 is statistically significant at 0.05 level. This indicates that the mean difference of systolic 21.7 and the mean difference of diastolic 10 is a true difference. So the researcher accepts the research hypothesis and rejects the null hypothesis. It implies that the garlic had significant effect on the reduction of the sample blood pressure in the experimental group.

Silagy CA, Neil HAW.(1994) conducted a experimental study to evaluate the effect f garlic on blood pressure. Seven double blind trials compared garlic with placebo in 383 patients. Dried garlic preparation in the dose range of 600-900 mg per day. Interventions ranged from 4 weeks to 10 months. patients groups were predominantly hypertensives. Systolic and diastolic blood pressure decreased significantly after the interventions from baseline with garlic compared with placebo, with an overall pooled

difference of a7.7mm hg(95%CI,4.3 to 11)advantage with garlic. Significantly greater reduction of diastolic blood pressure from baseline with garlic compared with placebo, with an overall advantage of 5mm hg(95%CI 2.9 to 7.1).In conclusion, it suggests that garlic therapy is effective in maintaining blood pressure level for patients with hypertension.

These findings support the findings of present study and hence it may be concluded that garlic therapy is effective in maintaining the blood pressure level for patients with hypertension.

3. The second objective of the study was to find out the pre-test and post-test levels of blood pressure among control group of patients with hypertension

Table 6 presents that in the experimental group, the mean pre-test Blood pressure level on 1st day 140.3 and on 7th day 129 and it was declined to 118.6 on 15th day, where as in control group, there was only 0.4 difference from mean pre test on 1st day to mean post test on 7th day and it was slightly decreased to 135 on 15th day.

Dhawan V, Jain S.(2004) conducted a study to assess the effect of garlic supplementation prevents oxidative DNA damage in essential hypertension. Twenty patients of essential hypertension as diagnosed by JNC VI criteria (Group I) and 20 age and sex-matched normotensive controls (Group II) were enrolled in the study. Both groups were given garlic pearls in a dose of 250 mg per day for 2 months. Baseline samples were taken at the start of the study .A moderate decline in blood pressure were observed in group I subjects with garlic pearls supplementation. Further, a significant increase in vitamin levels also observed in this group as compared to the control subjects.

These findings point out the effects of garlic supplementation in reducing blood pressure and counteracting oxidative stress in essential hypertension.

These findings support the findings of pretest study and hence it may be concluded that garlic therapy is effective in maintaining blood pressure level of the patients with hypertension.

4. The third objective of the study was to evaluate the effectiveness of garlic among the patients with hypertension.

Table 7 summarizes that ,in the experimental group 19 subjects had the mean post systolic measurement in normal and 11 subjects had mild blood pressure, where as in control group only 3 were in normal, and only 4 subjects were in moderate category. Likewise, mean post test diastolic measurement revealed 17 subjects were in normal, and only 4 subjects were in moderate category in experimental group, where as 2 subjects in control group had moderate, and only 9 subjects were in normal diastolic blood pressure level. So the researcher accepts that, garlic therapy is effective

Table 8 summarizes that in the experimental group the mean post test B.P level for systolic 118.6 and for diastolic 80 is lesser than the mean post test B.P level for systolic 135 and for diastolic 85.6 of control group. The obtained 't' value for systolic 9.64 and diastolic 3.27 is statistically significant at 0.05 level this indicates that the mean difference of systolic 16.4 and diastolic 5.6 is a true difference and has not occurred by chance. So the researcher accepts the research hypothesis and rejects the null hypothesis.

There was a marked difference between experimental and control group ,in terms of reduction blood pressure level after administration of garlic therapy.

Ebsco Cam (2010) conducted a study to assess the effect of garlic on lowers blood pressure level. Numerous studies have found evidence the garlic lowers blood pressure, perhaps in the neighborhood of 5% to 10% more than placebo. It remains unclear whether garlic supplements can help patients with high blood pressure safety eliminate or avoid antihypertensive medications. Followed 47 subjects with an average starting blood pressure of 71/101. Over a period of 12 weeks, half were treated with 600 mg of garlic powder daily standardized to 1.3% alliin, while the other half were given placebo group by 5% and 4%, respectively. It suggests that a garlic preparation reduces blood pressure in patients with hypertensions.

These findings support the findings of post test study. Hence it may be concluded that garlic intake is effective in maintaining blood pressure level of patient with hypertension.

Comparison of mean pretest and posttest blood pressure level in the experimental group.

The present study reveals that in experimental group, the mean post-test systolic blood pressure level 118.6 was lower than the mean pre test systolic blood pressure level 140.3.Te obtained 't' value 15.2 at df 29 is significant at 0.05 level. This indicates that the mean difference of 21.7 is a true difference, which has not occurred by chance.

The mean post test, diastolic blood pressure level80 was lower than the mean pretest diastolic blood pressure level 90.The obtained 't' value7.6 at df 29 is significant at 0.05 level. This indicates that the mean difference of 10 is a true difference which has not occurred by chance.

5. The fourth objective of the study was to find out the Association of post test systolic blood pressure level after administration of garlic therapy with selected demographic variables (age, sex, education, occupation, duration of illness, dietary pattern, BMI) in experimental group.

In order to find out the association between the post test blood pressure level of experimental group and selected variables of the subjects, chi-square test was computed.

For the convenience of computation and tabulation the researcher had clubbed age group as above 55 and below 55 years. The obtained chi-square value of 1.02 at df (1) was not significant at 0.05 level.

Regarding Systolic Blood pressure and sex, the calculated chi-square value was 0.61 at df (1) was not significant at 0.05 level.

Regarding occupation, the calculated chi-square value was 0.93 at df(2) was not significant.

It was found that there is no association between Systolic Blood pressure and family history of Hypertension. The obtained chi-square is 0.59 at df (3) was not significant.

Regarding duration of illness, the calculated chi-square was 0.05 at df (1) was not significant at 0.05 level.

Regarding duration of treatment, the calculated chi-square was 0.8 at df (1) was not significant at 0.05 level.

It was found that there was no association between Systolic Blood pressure level and diet. The obtained chi-square was 2.91 at df (1) was not significant at 0.05 level.

Regarding regular exercise, the calculated chi-square value 3.26 at df (1) was not significant at 0.05 level.

Regarding habit of smoking there was no association. The obtained value 3.75 at df(10) was not significant at 0.05 level.

Regarding BMI, the calculated value is 0.76 at df(2) was not significant at 0.05 level..

There is no association between the post test Systolic blood pressure level of experimental group and age 1.02 df (1),sex 0.61 df (1),education 0.06 df (1),occupation 0.93 df (2),family history of hypertension 0.59 df (3),duration of illness 0.05 df (1),duration of treatment 0.8 df (1),dietary pattern 2.91 df (1),regular exercise 3.26 df (1),habit of smoking 3.75 df (1),BMI 0.76 DF (2).

From these findings, it may be concluded that the garlic therapy and its effect on systolic blood pressure level are not dependent on the demographic variables of the subjects.

Association of post test diastolic blood pressure level after administration of garlic therapy with selected demographic variables (age, sex, education, occupation, duration of illness, dietary pattern, BM) in experimental group.

In order to find out the associating between the diastolic blood pressure level and age chi-square test was computed. For the convenience of computation and tabulation the researcher had clubbed the age group as above 55 and below 55 years. The obtained value of chi-square 0.35 at df (1) was not significant.

Regarding sex, the calculated chi-square value was 0.05 at df (1) was not significant at 0.05 level.

Regarding occupation the calculated value of chi-square was 0.58 at df (2) was not significant.

Regarding family history of Hypertension the calculated value of chi-square was 0.72 at df (3) was not significant.

It was found that there is no association between Diastolic Blood Pressure level and duration of illness. The obtained chi-square is 0.2 at df (1) was not significant.

Regarding diet, the calculated value chi-square as 1.69 at df(1) was not significant at 0.05 level.

Regarding regular exercise, the calculated value chi-square is0.05 at df(1) was not significant.

Regarding habit of smoking, the calculated value of chi-square was 0.16 at df(1) was not significant.

Regarding Diastolic Blood Pressure level and BMI, the calculated value is 8.3 at df(2) was significant at 0.05 level. So there is an association between Diastolic Blood Pressure level and BMI.

Regarding diastolic blood pressure and BMI, the calculated value is 8.3 at df (2) was significant at 0.05 level. So there is an association between blood pressure level and BMI.

Since the association could be established between the post-test mean diastolic blood pressure with only BMI. The researcher is unable to reject the null hypothesis and partially accepts the research hypothesis.

CHAPTER – VI

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENTATIONS

The chapter deals with the summary of study, the implications for nursing practice, the implication for nursing education, nursing research, nursing administration and the recommendations for future research.

SUMMARY OF THE STUDY

The study was undertaken to evaluate the effectiveness of garlic therapy in maintaining blood pressure level among patients with hypertension.

The following objectives were set for the study.

5. To find out the pretest and post test level of blood pressure among the experimental group of patients with hypertension who had the intake of garlic.
6. To find out the pre test and post test level of blood pressure among control group of patients with hypertension.
7. To evaluate the effectiveness of garlic among the patients with hypertension.
8. To find out the association between the post-test level of Blood pressure among patient with hypertension and demographic variables (age, sex, education, diet, disease condition) in experimental group.

The following hypothesis were set for the study, all hypothesis were tested at 0.05 level of significance.

H1:

The mean post test blood pressure level of experimental group will be significantly lower than the mean pre test blood pressure level among patients with hypertension who received garlic intake.

H2:

The mean post test blood pressure level of experimental group will be significantly lower than the mean post test pressure level among patients with hypertension in control group.

H3:

There will be a significant association between mean post test blood pressure level and selected demographic variables such as age, sex, occupation, education, duration of illness, treatment, clinical symptom helped in diagnosis, dietary pattern and BMI.

MAJOR FINDINGS OF THE STUDY

1. Demographic profile of the sample:

a) Regarding age, majority of the samples 26.6% were 51-55yrs in experimental group and 23.3% in the control group were 51-55 yrs.

b) Regarding sex, 63.3% were females in experimental group and 56.6% were males in control group.

c) Regarding occupation, it shows that the majority of the subjects, 63.3% in the experimental group were moderate workers and 40% in the control group were moderate workers.

d) Regarding marital status, 96.6% of the patients were married in experimental group and 100% were married in control group.

e) Regarding family history of hypertension, 40% in experimental group were the parents and 26.6% in control group were both the parents.

f) Regarding duration of illness, 60% of the subjects were less than 3 yrs and, 56.6% of the subjects were less than 3 yrs in the control group

g) Regarding duration of treatment, 63.3% in the experimental group were less than 3 yrs and 60% control group were less than 3 yrs

h) With regard to diet, 76.6% in the experimental group were non-vegetarian and 83.3% were non-vegetarian in control group.

i) Regarding regular exercise, 90% in the experimental group not followed any exercise and 93.3% in control group not followed any exercise

j) Regarding BMI, 50% in the experimental group were more than 25 and in the control group, 46.6% were between 18-25.

2. In the experimental group, the mean pre-test Blood Pressure level on 1st day 140.3 and on 7th day 129 and it was declined to 118.6 on 15th day, where as in control group, there was only 0.4 difference from mean pre test on 1st day to mean post test on 7th day and it was slightly decreased to 135 on 15th day.

3. In the experimental group the mean post test systolic Blood Pressure level 118.6 is lower than the mean pre test systolic Blood Pressure level 140.3 and the mean

post test diastolic, Blood Pressure level of 80 is lower than the mean pre test diastolic Blood Pressure level 90. The obtained 't' value for systolic 15.2 and the obtained 't' value for diastolic 7.6 is statistically significant at 0.05 level. This indicates that the mean difference of systolic 21.7 and the mean difference of diastolic 10 is a true difference.

4. In the experimental group the mean post test B.P level for systolic 118.6 and for diastolic 80 is lesser than the mean post test B.P level for systolic 135 and for diastolic 85.6 of control group. The obtained 't' value for systolic 9.64 and diastolic 3.27 is statistically significant at 0.05 level this indicates that the mean difference of systolic 16.4 and diastolic 5.6 is a true difference.
5. The mean blood pressure level after administration of garlic therapy among the patients with hypertension was lower than the mean blood pressure level before giving garlic therapy.
6. There was no association between post test systolic and diastolic blood pressure level of experimental group and age, sex, occupation education, duration of illness, treatment, dietary pattern, exercise. But there was only an association between diastolic blood pressure level and BMI.

CONCLUSIONS

The following conclusions were drawn from the study.

1. The study proved that garlic therapy maintains blood pressure level among patients with hypertension
2. There is no association between post test systolic and diastolic blood pressure level of experimental group and age, sex, occupation, education, duration of

illness, treatment, dietary pattern, exercise. But there was only an association between diastolic blood pressure level and BMI.

IMPLICATIONS

The findings of the present study supports that, garlic therapy is very safe, cost effective, and almost is not harmful to health. It is proved to be effective in non pharmacologic management to reduce blood pressure level. The findings of the study have several implications on the following fields.

IMPLICATIONS FOR NURSING PRACTICE:

- The findings of the study enlighten the fact that garlic therapy can be used to maintain the blood pressure level of patients with hypertension.
- The study findings help the nursing personnel to include garlic therapy as a nursing intervention in the management of hypertensive patients.
- Selected garlic therapy can be administered to maintain blood pressure level of patients with hypertension.
- Demonstrations can be arranged for patients with hypertension regarding garlic therapy in OPD.
- Garlic therapy to be given to all the hypertensive patients. So all nurses need to know about the garlic preparation.

IMPLICATIONS FOR NURSING EDUCATION:

- ✓ The study will enhance the nursing students to acquire knowledge about garlic therapy and its uses in maintaining blood pressure level.
- ✓ The study will enable the students to compare garlic therapy with other therapies for reducing the blood pressure level.

- ✓ This study arouses motivation on the student to intelligibility care for the client with blood pressure.
- ✓ This study enhances the students to think comprehensively in planning the intervention in maintaining blood pressure.

IMPLICATIONS FOR NURSING ADMINISTRATION:

1. These findings will help the administrators to encourage the nurses to use garlic therapy in maintaining blood pressure level for hypertensive client.
2. It helps to provide critical thinking regarding garlic therapy and its management.
3. Charts regarding uses of garlic in hypertension can be fixed in the words and OPD so that it an motivate the patient to take it.
4. The nurse-administrator can arrange conference and workshop to educate head nurses and staff nurse regarding the importance of garlic maintaining blood pressure.

IMPLICATIONS FOR NURSING RESEARCH:

- ❖ This study can be a baseline for future studies to build upon and motivate the investigators to conduct further studies.
- ❖ A study can be done with large samples
- ❖ A study can be done for long duration
- ❖ This study will help the researcher to formulate new methods to maintain the normal blood pressure.

LIMITATIONS

The limitations of the study were

1. The sample size was 60, each finding should be generated with cautions
2. The settings of the study were chosen due to the researcher's familiarity and it was not by random selection. Due to this methodological limitation, the findings can be generalized only to the selected hospitals.
3. The patients were followed only 30 days.

RECOMMENDATIONS

- The study can be conducted by using large populations to generalize the findings
- A longitudinal study can be conducted to assess the effectiveness of garlic therapy in maintaining blood pressure level.
- This study can be done as a comparative study in different settings.
- The effectiveness of garlic therapy can be tested for other disease conditions like hyperlipidemia, and other cardiac disease etc.
- A follow up study can be done to find out whether the patients are practicing garlic regularly.

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APPENDIX- I

COPY OF LETTER SEEKING PERMISSION FROM THE DDHS TO CONDUCT THE STUDY

Dr. NALINI JEYAVANTH SANTHA
Principal.

4/235, COLLEGE ROAD
THASILDAR NAGAR
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Ref. UT: SHNC: 2010

Date: 01.06.2010

To

Dr. Selvarani, M. D., (Gen. Medicine)
Consultant Physician and Professor,
Seelovam Hospital,
Umachikulam,
Madurai-14.

Respected Sir / Madam,

Sub: Sacred Heart Nursing College, Madurai – Project work of M. Sc (Nursing) student – permission requested – reg.

We wish to state that Ms. Chithra. D, Final year M. Sc (Nursing) student of our college has to conduct a Research project, which is to be submitted to The Tamilnadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of University requirements.

The topic of research project is "A study to assess the effectiveness of Garlic intake on blood pressure among patients with hypertension attending out patient unit in selected hospital at Madurai". We therefore request you to kindly permit her to do the research work in selected schools from June 1st to June 26th which is in your control, under your valuable guidance and suggestions.

Thanking you,

Yours faithfully,

Principal
SACRED HEART NURSING COLLEGE
ULTRA TRUST, MADURAI – 20.

APPENDIX – II

Letter requesting opinions and suggestions of experts for establishing content validity of tool

From

Ms. Chithra, D
II Year M. Sc (Nursing),
Sacred Heart College of Nursing,
Madurai – 20.

To,

Respected Sir / Madam,

SUB: Requesting opinions and suggestion of experts for the content validity and validity of tool.

I am a post graduate student (Pediatric Nursing) of Sacred Heart Nursing College. I have selected the below mentioned topic for research project submitted to DR. M.G.R. Medical University, Chennai as a fulfillment of Master of Science in Nursing.

TITTLE OF THE TOPIC:

"A study to assess the effectiveness of Garlic intake on blood pressure among patients with hypertension attending out patient unit in selected hospital at Madurai.

With regard to this may I kindly request you to validate my content and tool for its relevancy. I am enclosing the objectives of the study. I would be highly obliged and remain thankful for your great if you could validate and send it as early as possible.

Thanking You.

Place: Your 's faithfully,
Date:

(D. Chithra)

Encl : 1. Problem Statement
2. Demographic Profile
3. Content of Hypertension

APPENDIX – III

List of Experts Consulted for the Content Validity of Research Tool

1. Dr. G. Selva Rani, M.D.,

   Asst. Professor in Medicine,

   Govt. Rajaji Hospital,

   Madurai Medical College,

   Madurai

2. Dr. S. Calwin David Singh, M.B.B.S., M.D.,

   General Medicine,

   Jeya Sekharan Medical Trust,

   Nagarcoiil,

   K.K. Dist.

3. Prof. Mrs. Chandra Kala, M. Sc (N), Ph. D.,

   Vice Principal,

   Sacred Heart Nursing College

   Madurai.

4. Prof. Mrs. Poonguzhali, M. Sc (N)., M.A.,

   Principal,

   College of Nursing

   Madurai Medical College,

   Madurai.

5. Prof. Mrs. Sharmila Jansi Rani, M. Sc (N), Ph. D., M.A., M. Phil., (P.A).,

   Professor in medical surgical dept,

   Christian college of nursing,

   Neyyoor,

   Kanyakumari Dist.

APPENDIX – IV

Reliability Certificate for the Instrument

QUALITY CONCEPTS
67, 1st Floor, P&T Nagar Main Road,
P&T Nagar, Madurai - 625 017.
Tel : 91-452-4220215
E-mail : qualityconcepts@in.com

CALIBRATION CERTIFICATE

01.Certificate No. & Date : 20101270 19.04.2010

02. Page no. : 01 of 01

03.Name of the Client : **D.Chitra, Madurai.**

04.Name of the Instrument : Sphygmomanometer (BP Apparatus)

05.Identification No. of the instrument : 98124535

06.Range of the instrument : 0-300mm Hg

07. Least Count : 2 mm Hg

08.Make : SriShti

09.Calibrated on : 19.04..2010

10.Next Calibration due on : 19.04.2011 (User defined)

11.Standards Followed : IS 3390

12. Calibration Results

Sl. No.	Indicated Value mm Hg	Standard Value mm Hg	Error mm Hg
01	2800	280	0
02	200	200	0
03	160	160	0
04	140	140	0
05	120	120	0
06	100	100	0
07	80	80	0
08	60	60	0
09	0	0	0

13. Calibration Traceable to : NATIONAL STANDARDS (Digital Pressure Transducer certified by SITARC vides Cert. No. 065988

14. Allowable Tolerance as per IS 3390 : + 2 mm Hg or - 3 mm Hg

15. Instrument status : Deviations are within specified limits

Note: Calibrated and certified for ISO requirements only.

Calibrated by
Signature :
Designation : Chief Technician

QUALITY CONCEPTS QC

Approved by
Signature :
Designation : Director

APPENDIX – V

DEMOGRPAHIC DATA

PART – I:

1. Age (in years)	:	a) 36 – 40 years	b) 41 – 45 years
		c) 46 – 50 years	d) 51 – 55 years
		e) 56 – 60 years	f) Above 61 years
2. Sex	:	a) Male	
		b) Female	
3. Educational Status	:	a) Primary school	
		b) Secondary school	
		c) Higher Secondary School	
		d) Graduate	
4. Occupation	:	a) Sedentary worker	
		b) Moderate worker	
		c) Heavy worker	
5. Religion	:	a) Hindu	b) Muslim
		c) Christian	d) Others
6. Marital Status	:	a) Married	
		b) Unmarried	

PART II: CLINICAL PROFILE

1. Duration of Illness : a) Less than 3 years
   b) 3 – 6 years c) > 6 years
2. Duration of Treatment : a) Less than 3 years
   b) 3 – 6 years c) > 6 years
3. Type of Treatment : a) Ayurvedic b) Allopathic
   c) Homeopathic
4. Any history of past illness : a) Yes b) No
5. Did you suffer from any of other
   chronic diseases : a) Cardiac disease
   b) Renal disease
   c) Diabetes mellitus
   d) Nil
6. Family History of Hypertension : a) Both the parents b) Father
   c) Mother d) None
7. Treatment taken : a) Regular
   b) Irregular
   c) No

PART – III: LIFE STYLE PATTERN

1. Type of Diet
   a. Vegetarian
   b. Non vegetarian

2. Are you following Hypertensive diet?

a) Yes

b) No

3. Do you have the habit of doing regular exercise?

a) Yes

b) No

4. Do you have the habit of smoking?

a) Yes

b) No

5. Body Mass Index

a. Height in Cm

a) 145 – 155 cm

b) 156 – 165 cm

c) 166 – 175 cm

d) 176 – 185 cm and above

b. Weight in Kg

a) 35 – 45 kg

b) 46 – 65g

c) 66 - 75 kg

d) 76 – 85 kg and above

c. BMI

a) Less than 18

b) 18 – 25

c) More than 25.

PART IV:

Assessment of patient blood pressure level by bio-physiological measurement (sphygmomanometer).

OBSERVATION OF BLOOD PRESSURE LEVEL	DATE	TIME	FINDINGS mm of Hg		
			PRE TEST	POST TEST	
			DAY I	DAY 7	DAY 15
BLOOD PRESSURE LEVEL					